

SEQUENCE LISTING

<110> Garry, Jr., Robert F.
 Wilson, Russell B.

<120> METHOD OF PREVENTING VIRUS:CELL FUSION BY INHIBITING THE FUNCTION
 OF THE FUSION INITIATION REGION IN RNA VIRUSES HAVING CLASS I
 MEMBRANE FUSOGENIC ENVELOPE PROTEINS

<130> 12920.0013.00PC00

<150> US 60/517,181
 <151> 2003-11-04

<160> 31

<170> PatentIn version 3.3

<210> 1
 <211> 39
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide

<400> 1

Leu Ile Met Lys Asn His Leu Arg Asp Ile Met Gly Ile Pro Tyr Cys
 1 5 10 15

Asn Tyr Ser Arg Tyr Trp Tyr Leu Asn His Thr Ser Thr Gly Lys Thr
 20 25 30

Leu Pro Arg Cys Trp Leu Ile
 35

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 <213> Artificial Sequence

<220>
 <223> Synthetic peptide

<400> 2

Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala Thr
 1 5 10 15

Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp Phe Cys
 20 25 30

Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly
 35 40 45

Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu Arg Asn Phe
 50 55 60

Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr Phe Pro Arg
 65 70 75 80

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Glu Gly Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln Arg
85 90 95

Asn Phe Phe Ser
100

<210> 3
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<400> 3

Leu Arg Thr Phe Ser Ile Leu Asn Arg Lys Ala Ile Asp Phe Leu Leu
1 5 10 15

Gln Arg Trp Gly Gly Thr Cys His Ile Leu Gly Pro Asp Cys Cys Ile
20 25 30

<210> 4
<211> 43
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<400> 4

Ile Gln Asp Leu Glu Lys Tyr Val Glu Asp Thr Lys Ile Asp Leu Trp
1 5 10 15

Ser Tyr Asn Ala Glu Leu Leu Val Ala Leu Glu Asn Gln His Thr Ile
20 25 30

Asp Leu Thr Asp Ser Glu Met Asn Lys Leu Phe
35 40

<210> 5
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<400> 5

Leu Gly Leu Lys Leu Leu Arg Tyr Tyr Thr Glu Ile Leu Ser Leu Phe
1 5 10 15

Gly

<210> 6
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<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic peptide

<400> 6

Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala Thr Gln Gly Tyr Leu Ile
1 5 10 15

Ser Asn Phe Asp Glu Ser Ser Cys Thr Phe Met Pro Glu Gly Thr Val
20 25 30

Cys Ser Gln Asn Ala Leu Tyr Pro Met Ser Pro Leu Leu Gln Glu Cys
35 40 45

Leu Arg Gly Ser Thr Lys Ser Cys Ala Arg Thr Leu Val Ser Gly Ser
50 55 60

Phe Gly Asn Arg Phe Ile Leu Ser Gln Gly Asn Leu Ile Ala Asn Cys
65 70 75 80

Ala Ser Ile Leu Cys Lys Cys Tyr Thr Thr Gly Thr Ile Ile
85 90

<210> 7

<211> 57

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<400> 7

Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu Lys Asp Gln Gln
1 5 10 15

Leu Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala
20 25 30

Val Pro Trp Asn Ala Ser Trp Ser Asn Lys Ser Leu Glu Gln Ile Trp
35 40 45

Asn His Thr Thr Trp Met Glu Trp Asp
50 55

<210> 8

<211> 9

<212> PRT

<213> Artificial Sequence

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<400> 8

Ile Leu Asn Arg Lys Ala Ile Asp Phe
1 5

<210> 9

<211> 8

<212> PRT

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<223> Synthetic peptide

<400> 9

Cys His Ile Leu Gly Pro Asp Cys
1 5

<210> 10

<211> 19

<212> PRT

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<220>

<223> Synthetic peptide

<400> 10

Phe Leu Leu Gln Arg Trp Gly Gly Thr Cys His Ile Leu Gly Pro Asp
1 5 10 15

Cys Cys Ile

<210> 11

<211> 9

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<400> 11

Leu Lys Leu Leu Arg Tyr Tyr Thr Glu
1 5

<210> 12

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<212> PRT

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<223> Synthetic peptide

<400> 12

Cys Thr Phe Met Pro Glu Gly Thr Val Cys
1 5 10

<210> 13

<211> 19

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<220>

<223> Synthetic peptide

<400> 13

Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala Thr Gln Gly Tyr Leu Ile
1 5 10 15

Ser Asn Phe

<210> 14
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<220> .
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<400> 14

Cys Leu Arg Gly Ser Thr Lys Ser Cys
 1 5

<210> 15
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 <213> Artificial Sequence

<220>
 <223> Synthetic peptide

<400> 15

Thr Leu Val Ser Gly Ser Phe Gly Asn Arg Phe Ile Leu Ser Gln Gly
 1 5 10 15

Asn Leu Ile Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Thr Thr
 20 25 30

Gly Thr Ile Ile
 35

<210> 16
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 <212> PRT
 <213> LASSA VIRUS

<400> 16

Leu Leu Gly Thr Phe Thr Trp Thr Leu Ser Asp Ser Glu Gly Asn Glu
 1 5 10 15

Thr Pro Gly Gly Tyr Cys Leu Thr Arg Trp Met Leu Ile Glu Ala Glu
 20 25 30

Leu Lys Cys Phe Gly Asn Thr Ala Val Ala Lys Cys Asn Glu Lys His
 35 40 45

Asp Glu Glu Phe Cys Asp Met Leu Arg Leu Phe Asp Phe Asn Lys Gln
 50 55 60

Ala Ile Arg Arg Leu Lys Thr Glu Ala Gln Met Ser Ile Gln Leu Ile
 65 70 75 80

Asn Lys Ala Val Asn Ala Leu Ile Asn Asp Gln Leu Ile Met Lys Asn
 85 90 95

His Leu Arg Asp Ile Met Gly Ile Pro Tyr Cys Asn Tyr Ser Arg Tyr
 100 105 110

Trp Tyr Leu Asn His Thr Ser Thr Gly Lys Thr Ser Leu Pro Arg Cys

115	120	125
Trp Leu Ile Ser Asn Gly Ser Tyr Leu Asn Glu Thr Lys Phe Ser Asp		
130	135	140
Asp Ile Glu Gln Gln Ala Asp Asn Met Ile Thr Glu Met Leu Gln Lys		
145	150	155
Glu Tyr Ile Asp Arg Gln Gly Lys Thr Pro Leu Gly Leu Val Asp Leu		
	165	170
Phe Val Phe Ser Thr Ser Phe Tyr Leu Ile Ser Ile Phe Leu His Leu		
	180	185
Val Lys Ile Pro Thr His Arg His Ile Val Gly Lys Pro Cys Pro Lys		
	195	200
Pro His Arg Leu Asn His Met Gly Ile Cys Ser Cys Gly Leu Tyr Lys		
	210	215
Gln Pro Gly Val Pro Val Arg Trp Lys Arg		
225	230	

<210> 17
 <211> 388
 <212> PRT
 <213> SARS VIRUS

<400> 17

Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile Pro Phe Ala Met Gln
1 5 10 15
Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn Val Leu Tyr
20 25 30
Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln
35 40 45
Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln
50 55 60
Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln
65 70 75 80
Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp Ile Leu
85 90 95
Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg Leu Ile
100 105 110
Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln Gln Leu Ile
115 120 125
Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala Thr Lys Met
130 135 140
Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp Phe Cys Gly Lys
145 150 155 160
Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly Val Val
165 170 175

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Phe Leu His Val Thr Tyr Val Pro Ser Gln Glu Arg Asn Phe Thr Thr
 180 185 190
 Ala Pro Ala Ile Cys His Glu Gly Lys Ala Tyr Phe Pro Arg Glu Gly
 195 200 205
 Val Phe Val Phe Asn Gly Thr Ser Trp Phe Ile Thr Gln Arg Asn Phe
 210 215 220
 Phe Ser Pro Gln Ile Ile Thr Thr Asp Asn Thr Phe Val Ser Gly Asn
 225 230 235 240
 Cys Asp Val Val Ile Gly Ile Ile Asn Asn Thr Val Tyr Asp Pro Leu
 245 250 255
 Gln Pro Glu Leu Asp Ser Phe Lys Glu Glu Leu Asp Lys Tyr Phe Lys
 260 265 270
 Asn His Thr Ser Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn
 275 280 285
 Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val
 290 295 300
 Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys
 305 310 315 320
 Tyr Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val Trp Leu Gly Phe Ile
 325 330 335
 Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile Leu Leu Cys Cys Met
 340 345 350
 Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys Ser Cys Gly Ser Cys
 355 360 365
 Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val Leu Lys Gly Val Lys
 370 375 380
 Leu His Tyr Thr
 385
 <210> 18
 <211> 175
 <212> PRT
 <213> EBOLA VIRUS
 <400> 18
 Glu Ala Ile Val Asn Ala Gln Pro Lys Cys Asn Pro Asn Leu His Tyr
 1 5 10 15
 Trp Thr Thr Gln Asp Glu Gly Ala Ala Ile Gly Leu Ala Trp Ile Pro
 20 25 30
 Tyr Phe Gly Pro Ala Ala Glu Gly Ile Tyr Thr Glu Gly Leu Met His
 35 40 45
 Asn Gln Asp Gly Leu Ile Cys Gly Leu Arg Gln Leu Ala Asn Glu Thr
 50 55 60
 Thr Gln Ala Leu Gln Leu Phe Leu Arg Ala Thr Thr Glu Leu Arg Thr
 65 70 75 80

Phe Ser Ile Leu Asn Arg Lys Ala Ile Asp Phe Leu Leu Gln Arg Trp
 85 90 95
 Gly Gly Thr Cys His Ile Leu Gly Pro Asp Cys Cys Ile Glu Pro His
 100 105 110
 Asp Trp Thr Lys Asn Ile Thr Asp Lys Ile Asp Gln Ile Ile His Asp
 115 120 125
 Phe Val Asp Lys Thr Leu Pro Asp Gln Gly Asp Asn Asp Asn Trp Trp
 130 135 140
 Thr Gly Trp Arg Gln Trp Ile Pro Ala Gly Ile Gly Val Thr Gly Val
 145 150 155 160
 Ile Ile Ala Val Ile Ala Leu Phe Cys Ile Cys Lys Phe Val Phe
 165 170 175

<210> 19
 <211> 191
 <212> PRT
 <213> INFLUENZA VIRUS

<400> 19

Gly Leu Phe Gly Ala Ile Ala Gly Phe Ile Glu Asn Gly Trp Glu Gly
 1 5 10 15
 Met Ile Asp Gly Trp Tyr Gly Phe Arg His Gln Asn Ser Glu Gly Thr
 20 25 30
 Gly Gln Ala Ala Asp Leu Lys Ser Thr Gln Ala Ala Ile Asp Gln Ile
 35 40 45
 Asn Gly Lys Leu Asn Arg Val Ile Glu Lys Thr Asn Glu Lys Phe His
 50 55 60
 Gln Ile Glu Lys Glu Phe Ser Glu Val Glu Gly Arg Ile Gln Asp Leu
 65 70 75 80
 Glu Lys Tyr Val Glu Asp Thr Lys Ile Asp Leu Trp Ser Tyr Asn Ala
 85 90 95
 Glu Leu Leu Val Ala Leu Glu Asn Gln His Thr Ile Asp Leu Thr Asp
 100 105 110
 Ser Glu Met Asn Lys Leu Phe Glu Lys Thr Arg Arg Gln Leu Arg Glu
 115 120 125
 Asn Ala Glu Glu Met Gly Asn Gly Cys Phe Lys Ile Tyr His Lys Cys
 130 135 140
 Asp Asn Ala Cys Ile Glu Ser Ile Arg Asn Gly Thr Tyr Asp His Asp
 145 150 155 160
 Val Tyr Arg Asp Glu Ala Leu Asn Asn Arg Phe Gln Ile Lys Gly Val
 165 170 175
 Glu Leu Lys Ser Gly Tyr Lys Asp Trp Arg Cys Asn Ile Cys Ile
 180 185 190

<210> 20

<211> 438
 <212> PRT
 <213> MEASLES VIRUS

<400> 20

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Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
1          5          10          15

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Met Leu Asn Ser
          20          25          30

Gln Ala Ile Asp Asn Leu Arg Ala Ser Leu Glu Thr Thr Asn Gln Ala
          35          40          45

Ile Glu Ala Ile Arg Gln Ala Gly Gln Glu Met Ile Leu Ala Val Gln
          50          55          60

Gly Val Gln Asp Tyr Ile Asn Asn Glu Leu Ile Pro Ser Met Asn Gln
65          70          75          80

Leu Ser Cys Asp Leu Ile Gly Gln Lys Leu Gly Leu Lys Leu Leu Arg
          85          90          95

Tyr Tyr Thr Glu Ile Leu Ser Leu Phe Gly Pro Ser Leu Arg Asp Pro
          100          105          110

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
          115          120          125

Asp Ile Asn Lys Val Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Leu
130          135          140

Leu Gly Ile Leu Glu Ser Arg Gly Ile Lys Ala Arg Ile Thr His Val
145          150          155          160

Asp Thr Glu Ser Tyr Phe Ile Val Leu Ser Ile Ala Tyr Pro Thr Leu
          165          170          175

Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly Val Ser Tyr
          180          185          190

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
195          200          205

Thr Gln Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Thr Phe
210          215          220

Met Pro Glu Gly Thr Val Cys Ser Gln Asn Ala Leu Tyr Pro Met Ser
225          230          235          240

Pro Leu Leu Gln Glu Cys Leu Arg Gly Ser Thr Lys Ser Cys Ala Arg
          245          250          255

Thr Leu Val Ser Gly Ser Phe Gly Asn Arg Phe Ile Leu Ser Gln Gly
          260          265          270

Asn Leu Ile Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Thr Thr
          275          280          285

Gly Thr Ile Ile Asn Gln Asp Pro Asp Lys Ile Leu Thr Tyr Ile Ala
290          295          300

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Ala Asp His Cys Pro Val Val Glu Val Asn Gly Val Thr Ile Gln Val
305 310 315 320

Gly Ser Arg Arg Tyr Pro Asp Ala Val Tyr Leu His Arg Ile Asp Leu
325 330 335

Gly Pro Pro Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
340 345 350

Asn Ala Ile Ala Lys Leu Glu Asp Ala Lys Glu Leu Leu Glu Ser Ser
355 360 365

Asp Gln Ile Leu Arg Ser Met Lys Gly Leu Ser Ser Thr Ser Ile Val
370 375 380

Tyr Ile Leu Ile Ala Val Cys Leu Gly Gly Leu Ile Gly Ile Pro Ala
385 390 395 400

Leu Ile Cys Cys Cys Arg Gly Arg Cys Asn Lys Lys Gly Glu Gln Val
405 410 415

Gly Met Ser Arg Pro Gly Leu Lys Pro Asp Leu Thr Gly Thr Ser Lys
420 425 430

Ser Tyr Val Arg Ser Leu
435

<210> 21

<211> 199

<212> PRT

<213> HIV

<400> 21

Ala Val Gly Ile Gly Ala Leu Phe Leu Gly Phe Leu Gly Ala Ala Gly
1 5 10 15

Ser Thr Met Gly Ala Ala Ser Met Thr Leu Thr Val Gln Ala Arg Gln
20 25 30

Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile
35 40 45

Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln
50 55 60

Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu Lys Asp Gln Gln
65 70 75 80

Leu Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala
85 90 95

Val Pro Trp Asn Ala Ser Trp Ser Asn Lys Ser Leu Glu Gln Ile Trp
100 105 110

Asn His Thr Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr
115 120 125

Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys
130 135 140

Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp Asn
145 150 155 160

Trp Phe Asn Ile Thr Asn Trp Leu Trp Tyr Ile Lys Leu Phe Ile Met
165 170 175

Ile Val Gly Gly Leu Val Gly Leu Arg Ile Val Phe Ala Val Leu Ser
180 185 190

Ile Val Asn Arg Val Arg Gln
195

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<211> 22
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<213> Artificial sequence

<220>
<223> Synthetic peptide

<400> 22

Gly Asn His Ile Leu Ser Leu Val Gln Asn Ala Pro Tyr Gly Leu Tyr
1 5 10 15

Phe Ile His Phe Ser Trp
20

<210> 23
<211> 19
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic peptide

<400> 23

Gly Tyr Phe Val Gln Asp Asp Gly Glu Trp Lys Phe Thr Gly Ser Ser
1 5 10 15

Tyr Tyr Tyr

<210> 24
<211> 22
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic peptide

<400> 24

Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala Pro His Gly Val Val
1 5 10 15

Phe Leu His Val Thr Tyr
20

<210> 25
<211> 19
<212> PRT
<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 25

Gly	Val	Phe	Val	Phe	Asn	Gly	Thr	Ser	Trp	Phe	Ile	Thr	Gln	Arg	Asn
1				5					10					15	

Phe Phe Ser

<210> 26

<211> 19

<212> PRT

<213> Artificial sequence

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<400> 26

Met	Phe	Pro	Pro	Trp	Ser	Ala	Ala	Ala	Gly	Val	Pro	Phe	Ser	Leu	Ser
1				5					10					15	

Val Gln Tyr

<210> 27

<211> 26

<212> PRT

<213> Artificial sequence

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<400> 27

Gln	Asp	Ala	Ile	Lys	Lys	Leu	Asn	Glu	Ser	Tyr	Ile	Asn	Leu	Lys	Glu
1				5					10					15	

Val	Gly	Thr	Tyr	Glu	Met	Tyr	Val	Lys	Trp
			20					25	

<210> 28

<211> 19

<212> PRT

<213> Artificial sequence

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<400> 28

Met	Tyr	Lys	Thr	Pro	Thr	Leu	Lys	Tyr	Phe	Gly	Gly	Phe	Asn	Phe	Ser
1				5					10					15	

Gln Ile Leu

<210> 29

<211> 28

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 29

Ala Ala Cys Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu
1 5 10 15

Gln Glu Leu Gly Lys Tyr Glu Gln Tyr Ile Lys Trp
20 25

<210> 30

<211> 15

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 30

Asn Tyr Ser Lys Tyr Trp Tyr Leu Asn His Thr Thr Thr Gly Arg
1 5 10 15

<210> 31

<211> 19

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic peptide

<400> 31

Gly Thr Phe Thr Trp Thr Leu Ser Asp Ser Glu Gly Lys Asp Thr Pro
1 5 10 15

Gly Gly Tyr